

82349

Work Order ID 85387

June 07-12 9:25:42 AM

85387

Page 1

Item ID: D412-664-203TRN

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Stop

NS2

Start Date: 07/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/06/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MLJ

Date: 12/06/07 Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D412-664-243	Rev E(DEO)								
100		0.00							
100	MORI SEIKI CNC LATHE LARGE								
Mori Seiki	Memo	0.00							
Mori Seiki CNC Lathe Large	1-Fill tube with sand & install plugs DT8534 on both ends as per Folio FA166 2-Turn first side as per Folio FA166 3- File transition lines smooth. FOLIO REV: <u>12/06/16</u> DWG REV: <u>12/06/16</u>								AMMCL 12/06/16
110	QC1- Inspect dimensions to dimension sheet	0.00							
110	Memo	0.00							
QC									
Quality Control									AMMCL 12/06/16

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 85387

June-07-12 9:25:42 AM

85387

Page 2

Item ID: D412-664-203TRN

Accept

N900040100

Setup Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Start Date: 07/06/2012 Start Qty: 1.00 *1*

Cust Item ID:

Required Date: 21/06/2012 Req'd Qty: 1.00 *1*

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120 *120* Mori Seiki	MORI SEIKI CNC LATHE LARGE Memo 1-Turn second side as per Folio FA166 2- File transition lines smooth. 3- Remove sand and plugs 4-Scribe part # and batch # using vibrating stilus FOLIO REV: <u>A</u> DWG REV: <u>E</u>	0.00				1	0		MMI 12/06/12
130 *130* QC Quality Control	QC1- Inspect dimensions to dimension sheet Memo	0.00				1	0		MMI 12/06/12
140 *140* QC Quality Control	QC8- Inspect parts - second check Memo	0.00				DP	12-6-18		

W/O:		WORK ORDER CHANGES							
DATE	STEP	PROCEDURE CHANGE			By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)							
DATE	STEP	Description of NC Section A	Corrective Action Section B				Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date				

NOTE: Date & initial all entries

NCR: Yes / No

WORK ORDER NON-CONFORMANCE / UPDATE

DQA: John Date: 14/06/28QA Closed: CL Date: 12/06/29

Work Order: <u>85389</u>	DISPOSITION	AGAINST DEPARTMENT/PROCESS				
Part No. <u>D412-664-203TRN</u>	Rework <input type="checkbox"/>	Skid-tube <input type="checkbox"/>	Crosstube <input checked="" type="checkbox"/>	Prod. Eng. Coor. <input type="checkbox"/>	Engineering <input type="checkbox"/>	
NCR No. <u>12-1544</u>	Scrap <input type="checkbox"/>	Machining <input type="checkbox"/>	Small Fab <input type="checkbox"/>	Rec/Store/Packaging <input type="checkbox"/>	Quality <input type="checkbox"/>	
	Use-as-is <input checked="" type="checkbox"/>	Thermoforming <input type="checkbox"/>	Finishing <input type="checkbox"/>	Supplier <input type="checkbox"/>		
	Work Order Update <input type="checkbox"/>	Large Fab <input type="checkbox"/>	Composite <input type="checkbox"/>	Other <input type="checkbox"/>		

Root Cause	Date	Step	Qty	Description of work order update or Non-conformance	Initial Chief Eng	Action Description	Sign & Date	Verification	QC Inspector
Doc/Data	<u>12/06/28</u>	<u>130</u>	<u>1</u>	PART WAS INSPECTED PER QSI-038 BUT WAS UNABLE TO READING DIMENSION REQUIRED ON INSPECTION SHEET FOR READING 4 ON FAI INSPECTION SHEET. POSSIBLE DIMENSIONS ARE PART OF RECEIVING REPORT	<u>GP</u> <u>12/6/28</u> <u>QSI 044</u>	Acceptable. READING 4 IS ON RAW MATERIAL A RAW MATERIAL IS GOOD	<u>GP</u> <u>12/6/28</u>	<u>GP</u> <u>12-6-28</u>	
Equip/Tooling									
Operator									
Material									
Offset/Setup									
Other									
Process									
Supplier									
Training	<u>✓</u>								
Unauthorized									

FAULT CATEGORY

Landing Gear	Hardware	General	
Bending Passes Below Min	Breaking	Burrs	Maintenance
Centre Not Concentric to O/S	Missing	Contamination	Mislabeled
Cracks	Size/Length	Cut Too Short	Off-Set
Crushed/Crimp at Bending	Spinning	Documentation/Data	Orientation Misread
Inspection Strip in Tube	Threading	Finish	Out of Calibration
Other	Wrong	<input checked="" type="checkbox"/> Inspection Incomplete	Out of Sequence
Positioned Wrong		Inspection Unqualified	Outside Dimensions
Ripples on Inner Bend		Instructions Incomplete/Unclear	Over/Under tolerance
Torque Waves in Extrusion	Drill Holes	Jigs/Fixtures/Tooling	Part Lost
Turning Sequence	Misaligned	Kit Incorrect	Part Moved
Wave/Twist in Tube	Ovalized	Kit Missing	Raw Material
	Over/Undersized		
	Too Many		

Work Order ID 85387

June-07-12 9:25:42 AM

85387

Page 3

Item ID: D412-664-203TRN

Accept

N900040100

Setup

Start

NS1

Revision ID:

Item Name: Crosstube Turning Detail

Stop

NS2

Start Date: 07/06/2012 Start Qty: 1.00

1

Cust Item ID:

Required Date: 21/06/2012 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run

Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2Sequence ID/
Work Center ID
145***145***
Crosstubes

Crosstubes

Operation
DescriptionSet Up/
Run Hours
0.00

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
StampMemo
GRIND ONLY TRANSITION LINES SMOOTH LONGITUDE WAY.
etch using of take only →

TW

12-6-20

150

150
HandFXtube

Hand Finishing Crosstubes

Crosstubes Chemical Conversion

0.00

Memo →

160

160
QC

Quality Control

QC7-Inspect Chemical Conversion Coat

0.00

Memo →

0.00

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Work Order ID 85387***85387***

June-07-12 9:25:42 AM

Page 4

Item ID: D412-664-203TRN

Accept

Revision ID:

Item Name: Crosstube Turning Detail

Start Date: 07/06/2012 Start Qty: 1.00

1

Required Date: 21/06/2012 Req'd Qty: 1.00

1

Reference:

Approvals: Process Plan:

Date:

Tooling:

Date:

Run Start

NR1

QC:

Date:

SPC (Y/N):

Date:

Stop

NR2

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170		0.00							
170 Packaging	Packaging	0.00							Rm 12-6-20
Packaging	Memo	Identify and stock in kanban rack Location: <u>LG</u>							
180	QC21- Final Inspection - Work Order Release	0.00							
180 QC	Memo	0.00							12/6/21
Quality Control									

12/6/21 ~~12/6/21~~ 12/6/21

MF
12-06-20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

June-07-12 9:25:46 AM

Page 1

Work Order ID: 85387

85387

Parent Item: D412-664-203TRN

D412-664-203TRN

Parent Item Name: Crosstube Turning Detail

Start Date: 07/06/2012

Required Date: 21/06/2012

Start Qty: 1.00

Required Qty: 1.00

Comments:
 IPP Rev:A 08-03-06 new issue DD verified by:eec
 IPP Rev B 08.04.02 Removed polish EC verified by: DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6009-129		Manufactured	No			120	Each	23.0000	1	1			

D6009-129

Crosstube Material

<u>Location</u>	<u>Loc Qty</u>	<u>Loc Code</u>
LG	23	
69801	23	

69801

 9m.l
 16/06/12

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

DART AEROSPACE LTD	Work Order:	85387
Description: Crosstube Assembly (412 High Aft)	Part Number:	D412-664-243
Inspection Dwg: D412-664-243 Rev: E		Page 1 of 2

FIRST ARTICLE INSPECTION CHECKLIST

First Article Prototype

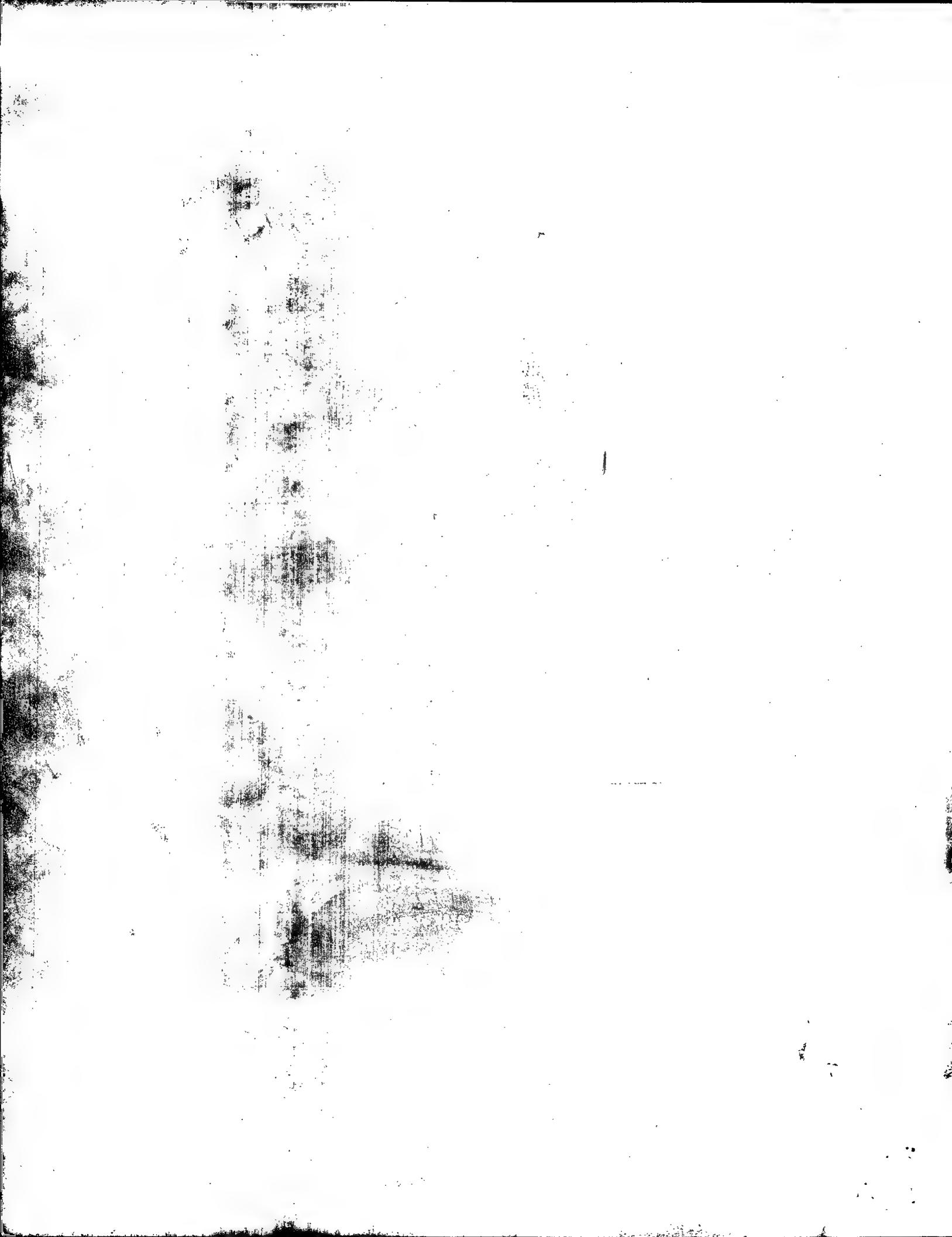
Inspection Sheet Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.684	+0.005/-0.000	2.686	/	vern	CNC-08
	2.748	+0.005/-0.000	2.749	/		
	2.884	+0.005/-0.000	2.886	/		
	3.019	+0.005/-0.000	3.022	/		
	3.163	+0.005/-0.000	3.164	/		
	3.308	+0.005/-0.000	3.317	/		
	3.429	+0.005/-0.000	3.430	/		
	2.990	+0.005/-0.000	2.991	/		
	2.618	+0.005/-0.000	2.621	/		
	0.200	+/-0.010	2.06	/	vern	CNC-08
	R0.063	+/-0.010	.063	/	RG	
	R0.500	+/-0.010	.500	/	in	
	4.971	+/-0.030	4.991	/	vern	CNC-08
SIDE B	2.684	+0.005/-0.000	2.687	/	vern	CNC-08
	2.748	+0.005/-0.000	2.752	/		
	2.884	+0.005/-0.000	2.888	/		
	3.019	+0.005/-0.000	3.023	/		
	3.163	+0.005/-0.000	3.164	/		
	3.308	+0.005/-0.000	3.312	/		
	3.429	+0.005/-0.000	3.430	/		
	2.990	+0.005/-0.000	2.991	/		
	2.618	+0.005/-0.000	2.621	/		
	0.200	+/-0.010	2.00	/	vern	CNC-08
	R0.063	+/-0.010	.063	/	RG	
	R0.500	+/-0.010	.500	/	in	
	4.971	+/-0.030	4.971	/	vern	CNC-08
	124.100	+/-0.020	124.100	/	tape	L6-25

Measured by: *mon L*
Date: 12/06/16

Audited by: *DD*
Date: 12-6-18

Prototype Approval: N/A
Date: N/A

Rev	Date	Change	Revised by	Approved
A	04.06.16	New Issue (P/O D412-664-203)	KJ/JLM	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	07.05.08	Tolerance updated for dimension 4.971	KJ/JLM	
D	10.02.02	Dimension 124.100 was 124.09	KJ	<i>DD</i> <i>AA</i>



DART AEROSPACE LTD

Work Order:

85387

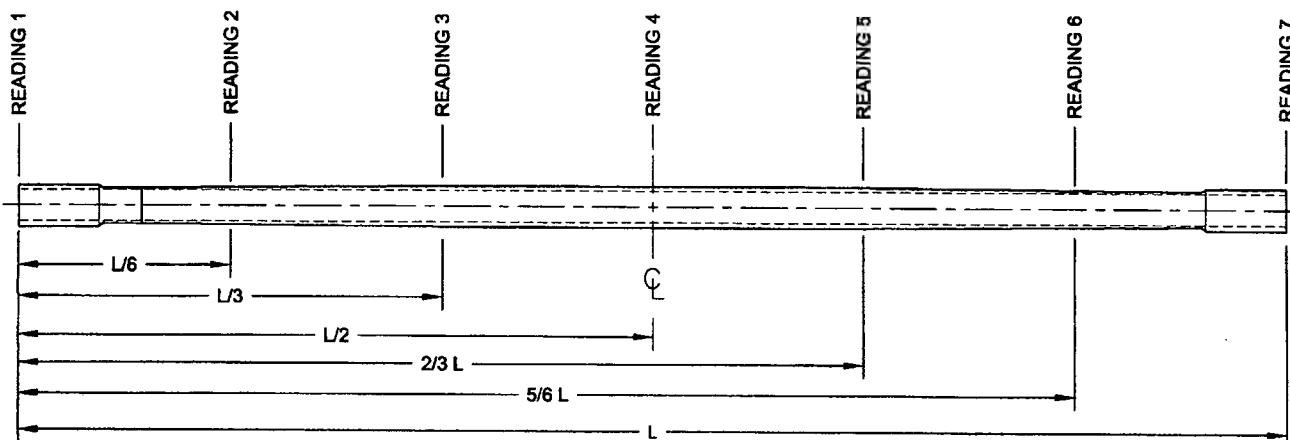
Description: Crosstube Assembly (412 High Aft)

Part Number:

D412-664-243

Inspection Dwg: D412-664-243 Rev: E

Page 2 of 2

WALL THICKNESS MEASUREMENT

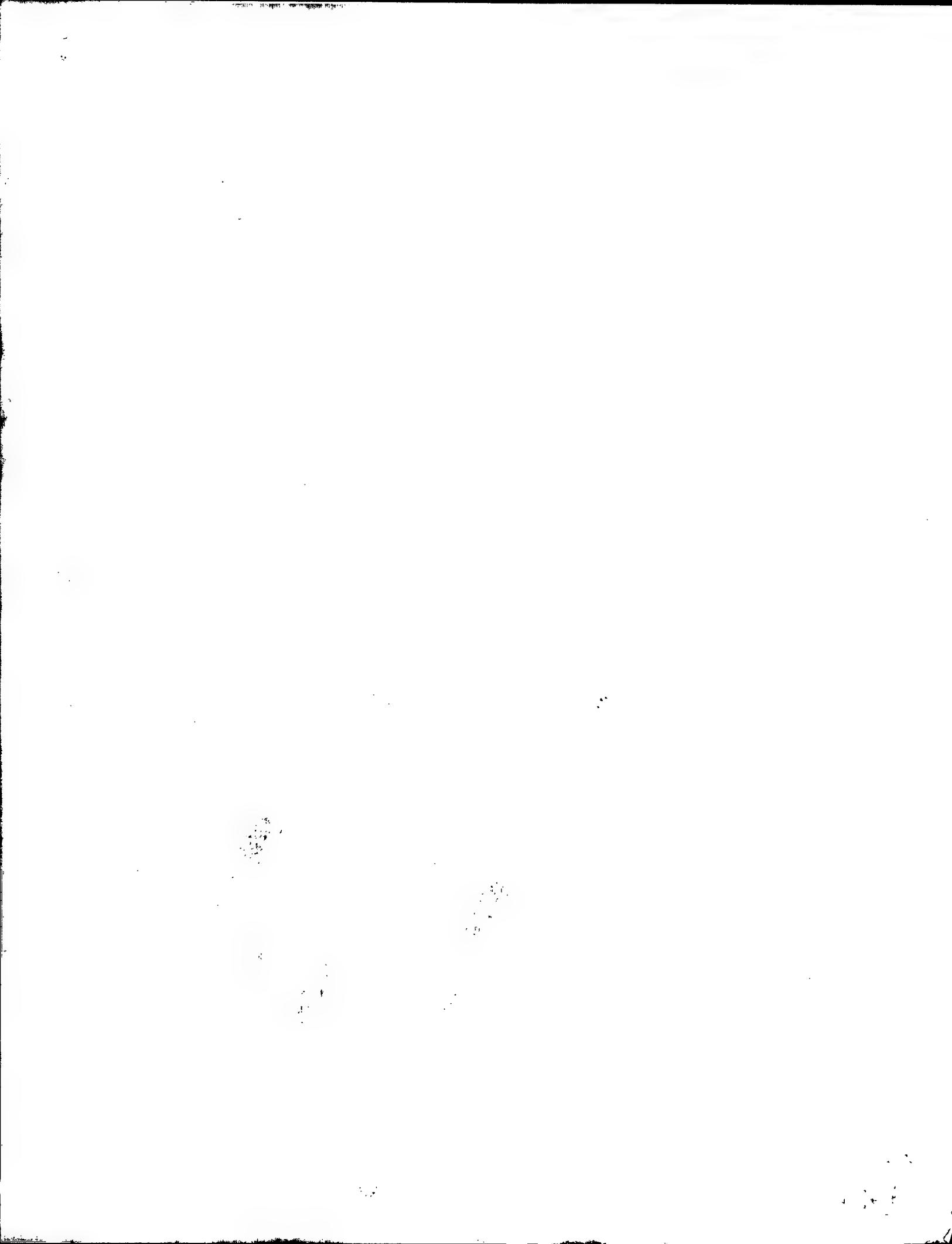
Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.376	.374	.384	.371	.010	
READING 2 L=	.315	.320	.315	.312	.008	
READING 3 L=	.497	.482	.469	.486	.015	
READING 4 L=	Can't measure	OK	12/16/27			0.073"
READING 5 L=	.488	.488	.470	.477	.018	
READING 6 L=	.328	.313	.303	.322	.025	
READING 7 L=	.374	.371	.387	.361	.016	

Calibration Result

Actual Block Thickness: 100-500Sitescan 250 Measured Thickness: 100-500

Measured by:	KC/910M/L	Audited by:		Preliminary Approval:	
Date:	12-6-20	Date:		Date:	

Rev	Date	Change	Revised by	Approved
A	04.06.16	New Issue (P/O D412-664-203)	KJ/JLM	
B	06.03.09	Dwg Rev updated	KJ/JLM	
C	07.05.08	Tolerance updated for dimension 4.971	KJ/JLM	
D	10.02.02	Dimension 124.100 was 124.09	KJ	
E	12.06.04	Wall thickness form added	KJ	



Item	Qty	Part Number	Description
1	X	D412-664-243	CROSSTUBE ASSEMBLY (412 HIGH AFT)
2	1	D6009-129	CROSSTUBE
3	2	D3595-063-570	RUBBER CUSHION
4	1	D2896-1	SUPPORT
5	2	D3189-1	CHAFING SHIELD
6	2	D2856-600-1009	ABRASION STRIP
7	4	MS21920-28	CLAMP
8	2	MS21920-30	CLAMP (OR MS21920-32)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6009-129
FINISHED LENGTH = 124.100±0.020 (BEFORE BENDING/TRIMMING)
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D412-664-243" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 47.0 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 8 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-30 CLAMPS (OR -32) WITH D3595-063-570 RUBBER CUSHIONS TO SECURE THE D2896-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035
- 15) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT

WITHOUT NOTICE
WORK ORDER

NO. 85387 MCL

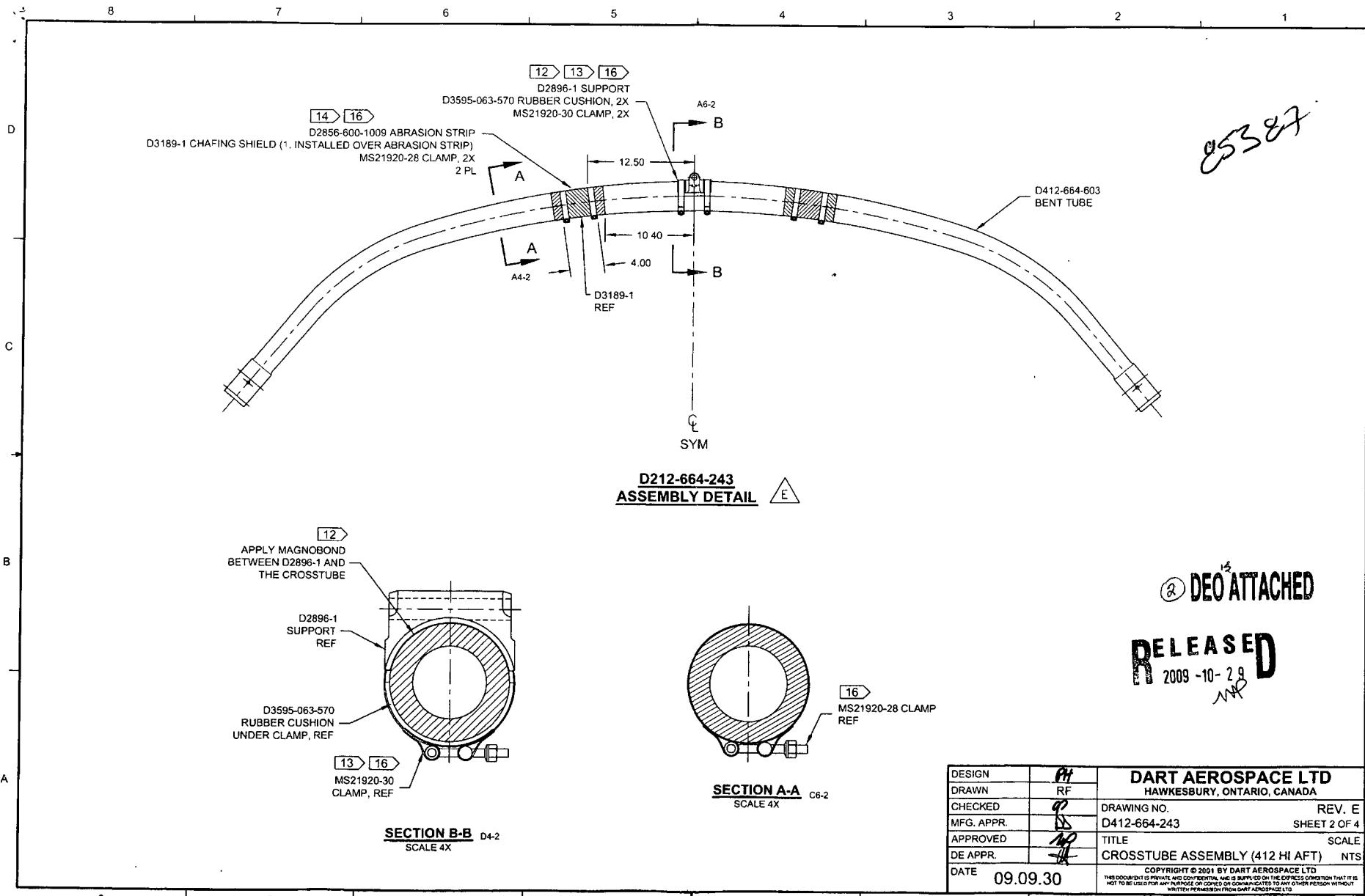
12/06/07

② DEO ATTACHED

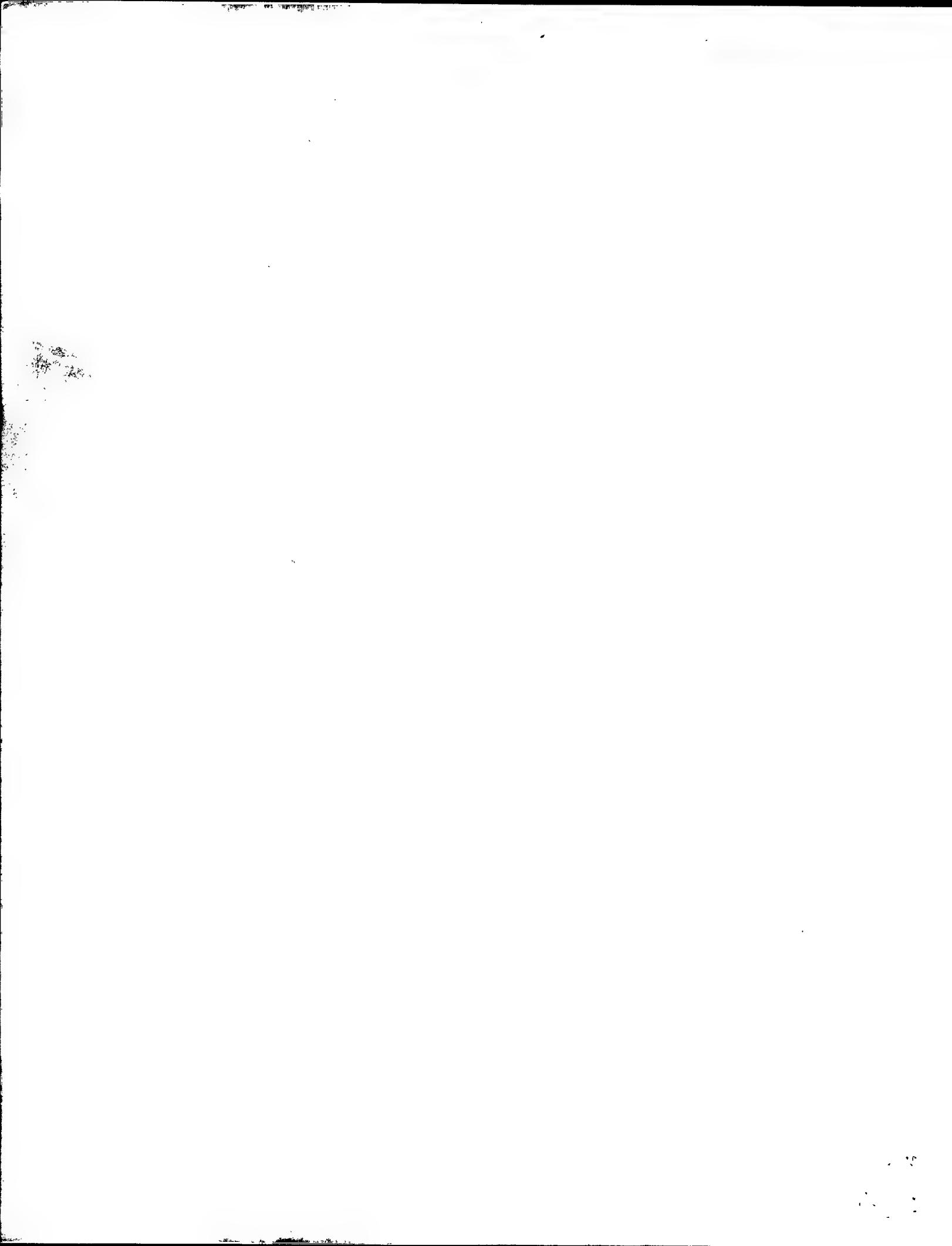
RELEASED
2009-10-29

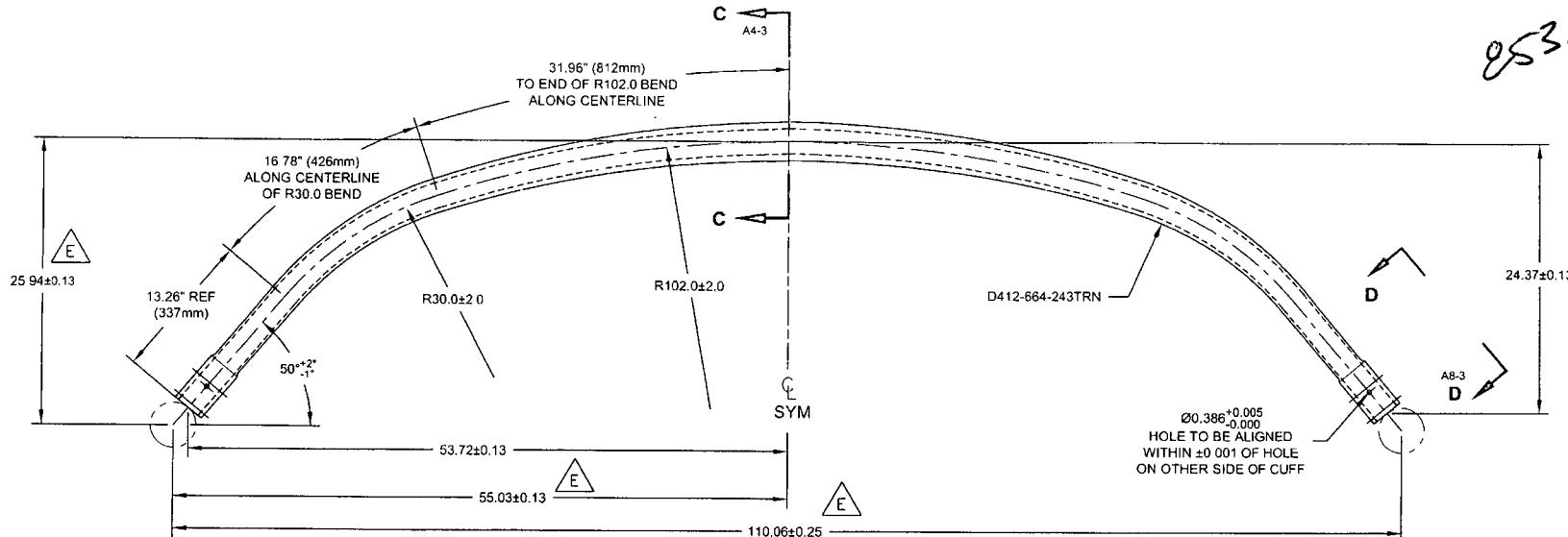
E	REFORMAT/REVISE GENERAL NOTES; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; RELOCATED FLAG #6 PER PAR 08-046 (ZN A6-3); ADD TOLERANCE (ZN B6-3, C4-3, C8-3 & C5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	09.09.30
D	REMOVE D2732-058, CHANGE TO D3595-063-570	PH	07.03.09
C	REMOVE D2856-600-1087, ADD D2732-058 & MAGNOBOND 6398, MS21920-32 WAS MS21920-30	MB	06.10.27
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	01.10.17
REV	DESCRIPTION	BY	DATE
DESIGN	PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	PP	DRAWING NO.	REV. E
MFG. APPR.	DA	D412-664-243	SHEET 1 OF 4
APPROVED	MA	TITLE	SCALE
DE APPR.	MA	CROSSTUBE ASSEMBLY (412 HI AFT)	NTS
DATE	09.09.30	COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS THE PROPERTY OF DART AEROSPACE LTD. IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	



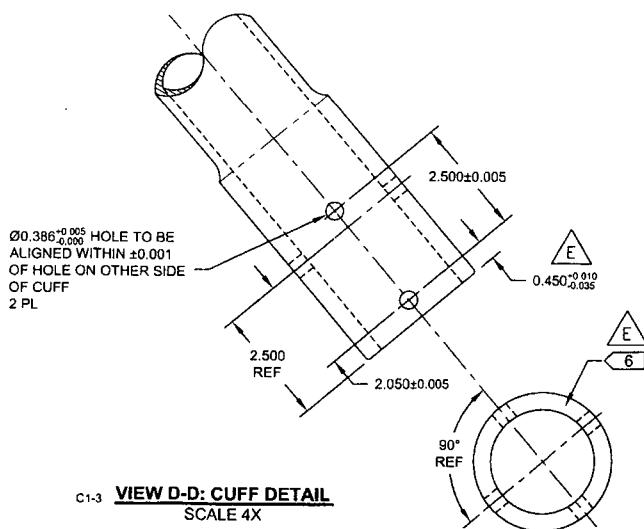


DESIGN	PH	DART AEROSPACE LTD
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA
CHECKED	PP	DRAWING NO. REV. E
MFG. APPR.	PP	D412-664-243 SHEET 2 OF 4
APPROVED	PP	TITLE SCALE
DE APPR.	PP	CROSSTUBE ASSEMBLY (412 HI AFT) NTS
DATE	09.09.30	COPYRIGHT © 2001 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY OTHER PURPOSE OR SHOWN TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD

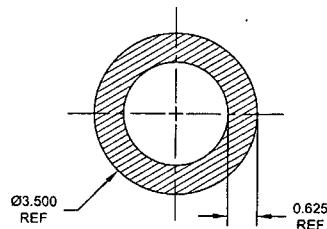




D412-664-603 10 E



C1-3 **VIEW D-D: CUFF DETAIL**
SCALE 4X

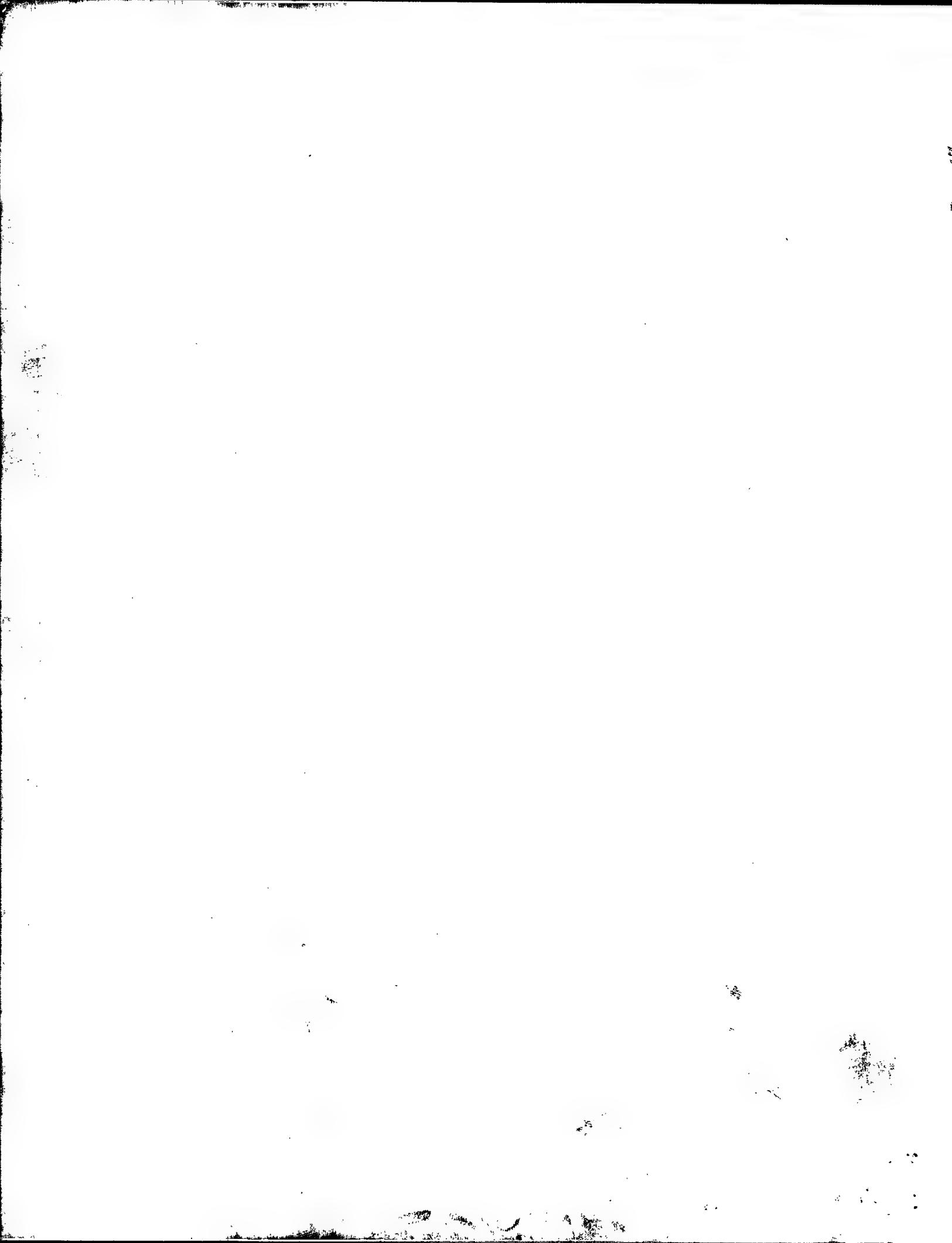


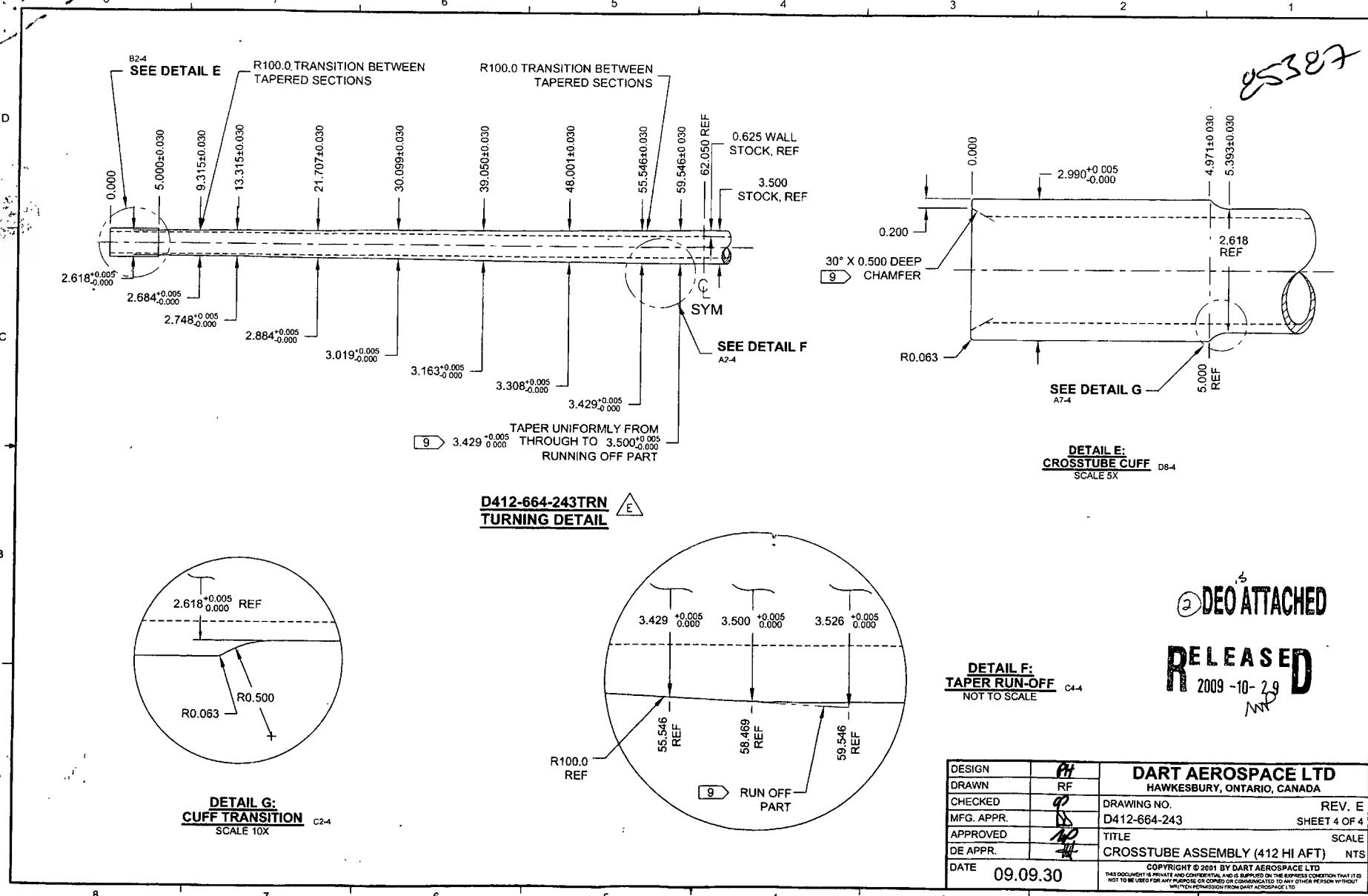
SECTION C-C DS-
SCALE 1:4

② DEO ATTACHED

RELEASED
2000-10-22

DESIGN	PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		
DRAWN	RF			
CHECKED	GP	DRAWING NO.	REV. E	
MFG. APPR.	DS	D412-664-243	SHEET 3 OF 4	
APPROVED	HO	TITLE	SCALE	
DE APPR.	HS	CROSSTUBE ASSEMBLY (412 HI AFT) NTS		
DATE	09.09.30	<small>COPYRIGHT © 2001 BY DART AEROSPACE LTD. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COMMERCIAL OR COMMERCIAL PURPOSES BY ANY OTHER PERSON WITHOUT THE EXPRESS WRITTEN CONSENT OF DART AEROSPACE LTD.</small>		





85387

② DEO ATTACHED

RELEASED
2009-10-29
WHD

DESIGN	PH	DART AEROSPACE LTD		
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA		
CHECKED	99	DRAWING NO.	REV. E	
MFG. APPR.	DS	D412-664-243	SHEET 4 OF 4	
APPROVED	AP	TITLE	SCALE	
DE APPR.	AP	CROSSTUBE ASSEMBLY (412 HI AFT)	NTS	
DATE	09.09.30	COPYRIGHT © 2016 BY DART AEROSPACE LTD		
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DRAWING NO. D412-664-243	TITLE CROSSTUBE ASSEMBLY (412 HI AFT)	REV. E	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D412-664-243-E-1	SHEET NO. SHEET 1 OF 2	SCALE NTS
DRAWN <i>MP</i>	CHECKED <i>MP</i>	MFG. APPR. <i>E</i>	APPROVED <i>MP</i>	DE APPR. <i>MP</i>		
DATE 11.03.31	DATE 11/03/31	DATE 11.03.31	DATE 11/03/31	DATE 11.03.31	DATE 11/03/31	DATE 11.03.31

PURPOSE:

REMOVED ABRASION STRIP IN FAVOR OF A THIN LAYER OF PROSEAL 890.

05387

CHANGE:

PARTS LIST IS AMENDED AS FOLLOWS:

IS:

Item	Qty -243	Part Number	Description
6	0	D2856-600-1009	ABRASION STRIP

WAS:

6	2	D2856-600-1009	ABRASION STRIP
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NOTES 2 AND 14, SHEET 1 ARE AMENDED AS FOLLOWS:

IS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
MASK UNDERSIDE OF CROSSTUBE AS SHOWN (HATCHED AREA)
PAINT OUTSIDE PER DART QSI 005 4.2
AFTER PAINTING, APPLY CLEAR COAT ON HATCHED AREA
- 14) APPLY A THIN COAT OF PROSEAL 890 ON INSIDE CONCAVE SURFACE OF D3189-1 CHAFING SHIELD AND LET CURE PER MANUFACTURER'S INSTRUCTIONS. INSTALL PROSEALED D3189-1 CHAFING SHIELD ONTO CROSSTUBE BY APPLYING A THIN COAT OF PROSEAL 890 ONTO CROSSTUBE. BE SURE TO ELIMINATE ANY AIR GAPS.

WAS:

- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 14) INSTALL D2856-600-1009 ABRASION STRIPS WITH A 0.13 REF GAP ON BOTTOM SIDE OF CROSSTUBE PER QSI 035.

RELEASED
2011-04-07
MP

DRAWING NO. D412-664-243	TITLE CROSSTUBE ASSEMBLY (412 HI AFT)	REV. E	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D412-664-243-E-1	SHEET NO. SHEET 2 OF 2	SCALE NTS
DRAWN 11.03.31	CHECKED 11.03.31	MFG. APPR. E	APPROVED 11.03.31	DE APPR. 11.03.31		
DATE 11.03.31	DATE 11.03.31	DATE 11.03.31	DATE 11.03.31	DATE 11.03.31	DATE 11.03.31	

S:

D3189-1 CHAFING SHIELD (1, INSTALLED OVER PROSEAL 890)
MS21920-28 CLAMP, 2X
2 PL

16 14

D412-664-603
BENT TUBE

2.00
1.00

WAS:

14 16

D2856-600-1009 ABRASION STRIP
D3189-1 CHAFING SHIELD (1, INSTALLED OVER ABRASION STRIP)
MS21920-28 CLAMP, 2X
2 PL

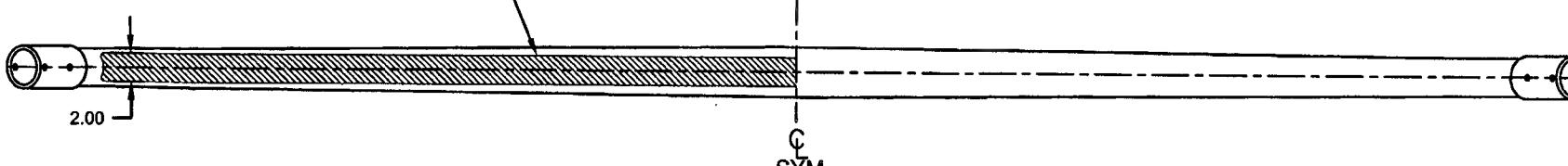
D3189-1
REF

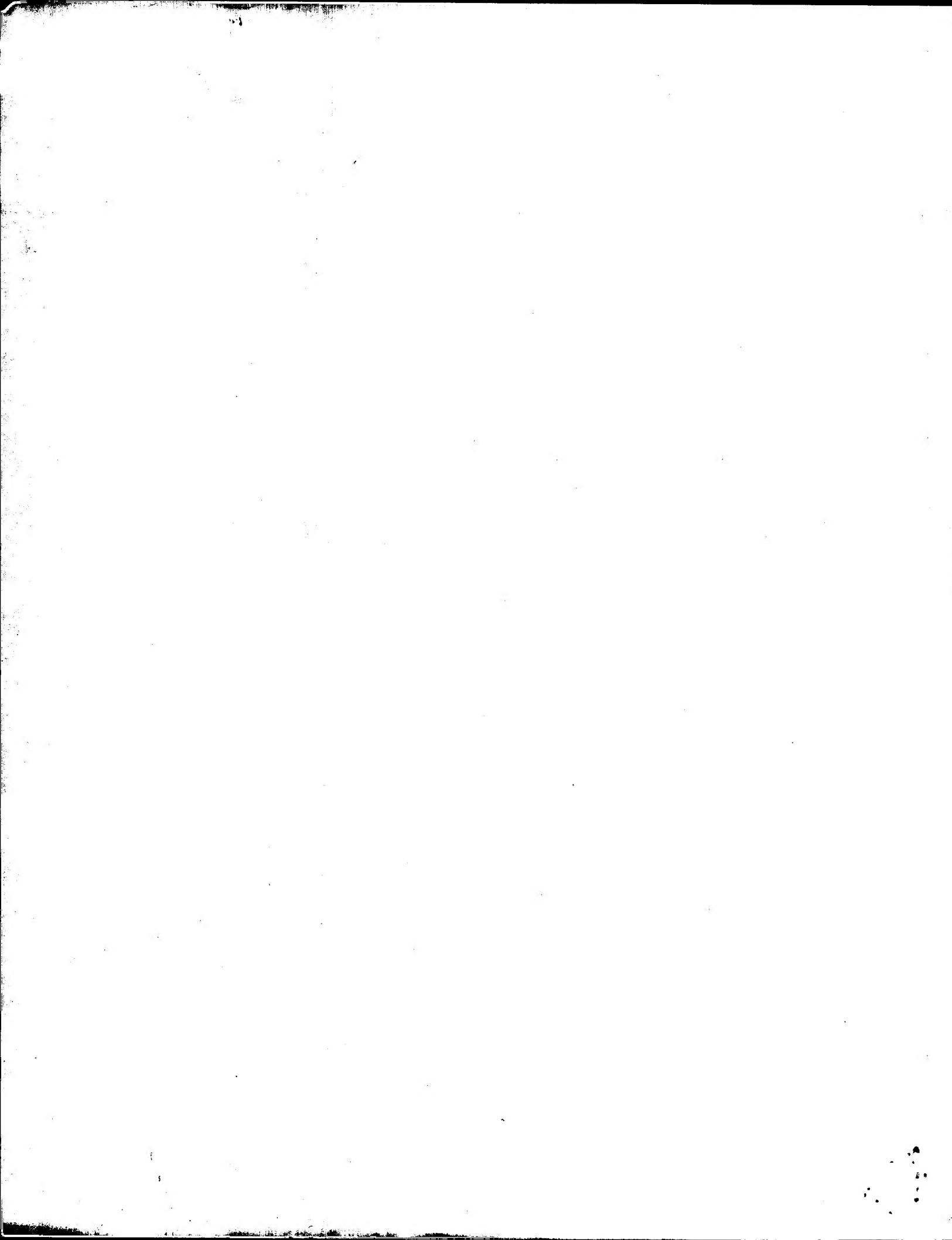
D412-664-243
ASSEMBLY DETAIL

RELEASED
2011-04-07
MP

MASK AREA PRIOR TO PAINTING AND
APPLY CLEAR COAT AFTER PAINTING

2





DRAWING NO. D412-664-243	TITLE CROSSTUBE ASS'Y (412 HI AFT)	REV. E	DART AEROSPACE LTD ENGINEERING ORDER	D.E.O. NO. D412-664-243-E-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>JP</i>	CHECKED <i>AS</i>	MFG. APPR. <i>E</i>	APPROVED <i>MP</i>	DE APPR. <i>MP</i>		
DATE 11.09.07	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19	DATE 11.09.19	

PURPOSE:

REPLACE MAGNOBOND WITH 3M DP460 SCOTCH-WELD EPOXY ADHESIVE

05387

CHANGE:

IS:

Item	Qty -243	Part Number	Description
9	A/R	SCOTCH-WELD DP460	EPOXY ADHESIVE, 3M SCOTCH-WELD

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 16, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

12) INSTALL D2896-1 CENTER SUPPORT USING A 0.04" TO 0.07" THICK LAYER OF SCOTCH-WELD DP460 PER QSI 015. LET CURE FOR 24 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

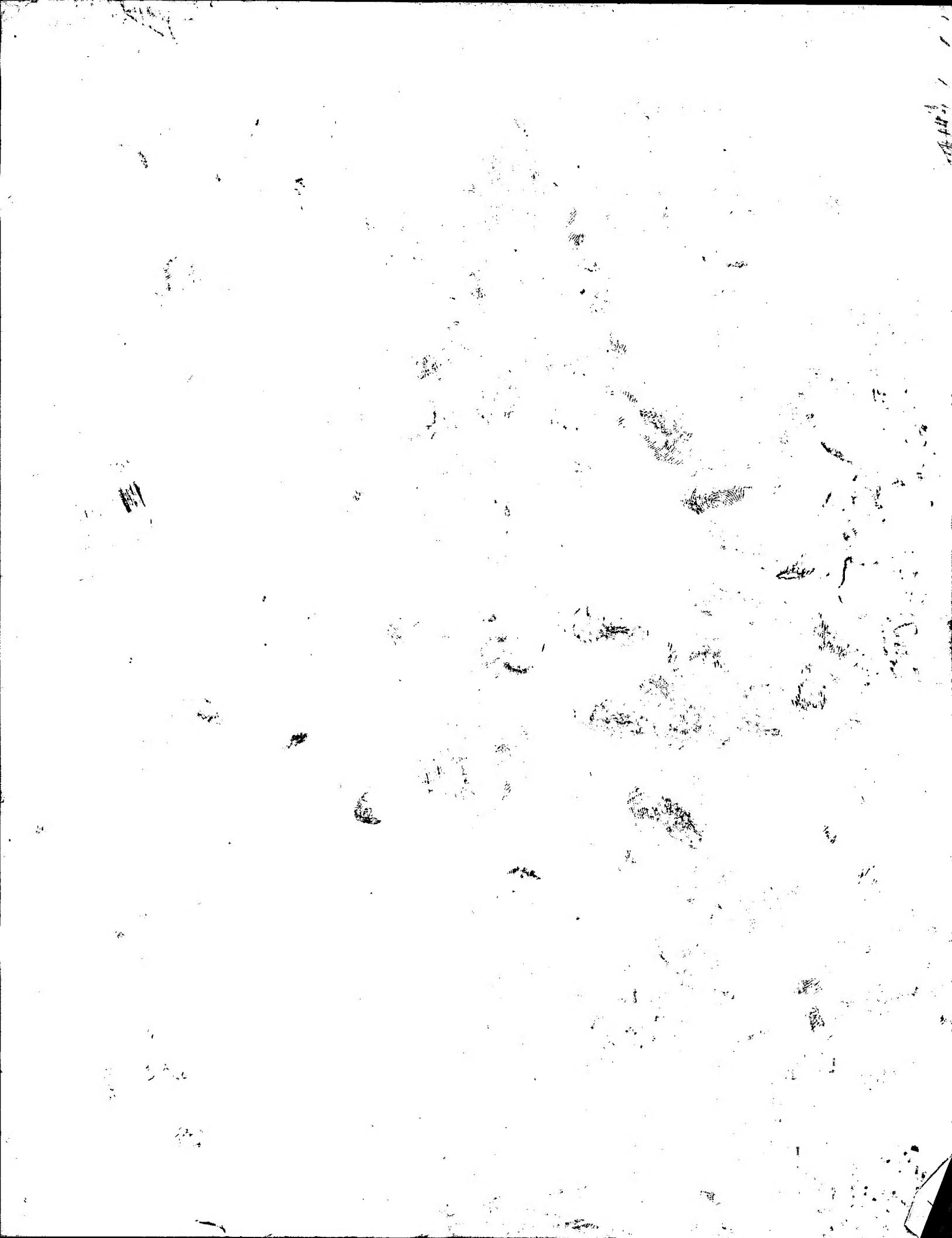
16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER ADHESIVE HAS CURED FOR 24 HOURS.

WAS:

12) INSTALL D2896-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2896-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.

16) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-09-29
MP



EXTRUSION INSPECTION SHEET

ULTRA SONIC MEASURMENTS

TUBE #	TOTAL LENGTH	DIA two readings	INSIDE DIA	wall thickness measured w/vern	Straghtness at 12"	Rockwell Reading	LOCATION on tube	R1	R2	R3	R4
1	129.00"	3.495"/3.492"	2.249"	0.612"/0.625"	0.019"	N/A	middle 64.5"	0.631"	0.631"	0.624"	0.624"
2	129.00"	3.500"/3.495"	2.249"	0.612"/0.641"	0.010"	N/A	middle 64.5"	0.630"	0.621"	0.625"	0.632"
3	129.00"	3.490"/3.498"	2.249"	0.615"/0.635"	0.005"	N/A	middle 64.5"	0.633"	0.638"	0.624"	0.618"
4	129.00"	3.491"/3.496"	2.248"	0.623"/0.632"	N/A	N/A	middle 64.5"	0.638"	0.630"	0.616"	0.625"
5	129.00"	3.498"/3.504"	2.250"	0.615"/0.621"	N/A	N/A	middle 64.5"	0.631"	0.624"	0.624"	0.630"
6	129.00"	3.493"/3.494"	2.249"	0.628"/0.612"	N/A	N/A	middle 64.5"	0.621"	0.623"	0.630"	0.623"
7	129.00"	3.491"/3.493"	2.250"	0.616"/0.630"	N/A	N/A	middle 64.5"	0.625"	0.629"	0.627"	0.627"
8	129.00"	3.495"/3.495"	2.249"	0.625"/0.615"	N/A	N/A	middle 64.5"	0.624"	0.623"	0.627"	0.627"
9	129.00"	3.499"/3.498"	2.250"	0.633"/0.613"	0.008"	N/A	middle 64.5"	0.631"	0.641"	0.621"	0.620"
10	129.00"	3.495"/3.501"	2.251"	0.624"/0.618"	N/A	N/A	middle 64.5"	0.619"	0.626"	0.636"	0.637"
11	129.00"	3.497"/3.500"	2.250"	0.625"/0.625"	N/A	N/A	middle 64.5"	0.621"	0.624"	0.632"	0.640"
12	129.00"	3.494"/3.498"	2.252"	0.615"/0.631"	N/A	N/A	middle 64.5"	0.625"	0.629"	0.629"	0.629"
13	129.00"	3.493"/3.495"	2.251"	0.621"/0.615"	N/A	N/A	middle 64.5"	0.631"	0.626"	0.623"	0.628"
14	129.00"	3.491"/3.494"	2.250"	0.620"/0.618"	N/A	N/A	middle 64.5"	0.627"	0.621"	0.626"	0.642"
15	129.00"	3.493"/3.501"	2.246"	0.625"/0.628"	N/A	N/A	middle 64.5"	0.627"	0.630"	0.631"	06.26"
PART # D6009-129		P/O# 14138		BATCH # B69801		Notes: <i>Jr26108</i>					